L 44076-66

ACC NR: AP6030713

mental results, shown in Table 1, indicate that there exists an optimal reflector
diameter for which the efficiency is a maximum. The pump light distribution in two

Table 1. Efficiency of laser reflectors

Type of Reflector	Major axis mm	Diameter mm	Distance between lamp and rod axes	Dimensions of flashlamp and rod dia. mm	length mm	Efficiency experimental	Efficiency calculated
Standard	—	—	9	5	45	—	0.25
Elliptic cylinder	100	—	40	5	45	0.36	0.38
	100	—	40	8	80	—	0.49
Circular cylinder	—	19	9	8	80	—	0.61
	—	20	9	8	80	0.58	0.64
	—	30	9	8	80	0.75	0.67
	—	44	9	8	80	0.67	0.62
	—	60	9	8	80	—	0.6
	—	70	9	8	80	0.66	—
	—	77	9	8	80	0.64	0.56

laser rods (one 5 mm in diameter in an elliptic cylinder reflector and the other
8 mm in a 40-mm-diameter circular-cylinder reflector) was calculated and compared

Card 2/3

L 44076-66

ACC NR: AP6030713

with results obtained elsewhere (Yu. A. Anan'yev and Ye. A. Korolev, O & S, 16, 702, 1964). All data were found to be in agreement. The efficiency of circular-cylinder reflectors with optimal parameters may be as high as 75%. Orig. art. has: 1 table and 4 figures. [YK]

SUB CODE: 20/ SUBM DATE 09Nov65/ ORIG REF: 005/ OTH REF: 011/ ATD PRESS: 5075

Card 3/3

L 44771-66   EWT(d)/EWT(m)/EWP(j)/EWP(h)/EWP(l)   IJP(c)   RM

ACC NR: AP6025683   (A)   SOURCE CODE: UR/0413/66/000/013/0149/0149

INVENTOR: Tushnyakov, M. D.; Stepanov, A. I.; Mukhin, Yu. V.; Eygenson, B. M.; Zhilenko, R. M.

ORG: none

TITLE: Rubberized-track assembly for lift truck and similar vehicles. Class 63, No. 183614 [announced by the Central Design Bureau of the Main Administration for the Mechanization of Construction Work, Main Administration for Assembling and Specialized Construction, USSR (Tsentral'noye konstruktorskoye byuro Glavnoye upravleniye po mekhanizatsii stroitel'nykh rabot Glavnoye montazhnoye spetsial'noye stroitel'stvo SSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 149

TOPIC TAGS: industrial truck, vehicle component, tracked vehicle

ABSTRACT: An Author Certificate has been issued for a rubberized link of a track-assembly for lift trucks and similar vehicles, consisting of a track with a shoe fastened to it; this is made of a rubber cushion and a rubber plate (see Fig. 1). To increase the life-span of the track chain, the shoe plate is made with rims

Card   1/2   UDC: 629.11.012.558.57

STEPANOV, A.K.

High quality is our objective. Mashinostroitel' no.9:7
(MIRA 18:12)
S '65.

1. General'nyy direktor Leningradskogo mashinostroitel'nogo
ob"yedineniya imeni Karla Marksa.

KOLESNIK, N.V., kand.tekhn.nauk; STEPANOV, A.K., inzh.; KOLESNIK, N.N., inzh.

Machine for centrifugal tumbling and polishing of parts. Vest.
mashinostr. 45 no.11:37-38 N '65.

(MIRA 18:12)

YAKOVLEV, Valeriy Vladimirovich; STEPANOV, A.L.; LABUTIN, V.K., red.;
        BORUNOV, N.I., tekhn.red.

[Transistor radios] Priemniki na tranzistorakh. Moskva,
Gos.energ.izd-vo, 1960. 23 p. (Massovaia radiobiblioteka,
no.366).   (MIRA 14:2)
                (Transistor radios)

STEPANOV, A. M.

USSR/Veterinary - New Drug

Jul 53

"The Effectiveness of Aminoquinacrine in Theileriasis of Cattle," I.E.
Goncharov, F. F. Parget, A. M. Stepanov, Vet Physicians

Veterinariya, No 7, pp 27-28

Describes exptl application of a minoquinacrine (A5) in the treatment
of Th. annulata of cattle. Used in the primary stages of the disease,
the drug did not control the progress of parasitic development or fever.
The administration of the 3rd and 4th intravenous does of 0.0035g per one
kg of live weight frequently produced a severe reaction. A comparison
table of the final effects of an intravenous administration of A5 and an intramus-
cular administration of sulfanthrol shows closely similar results.

STEPANOV, A.M., starshiy veterinarnyy vrach.

Methods of controlling hemosporidioses occuring in the south in
cattle kept on summer pastures in hitherto unaffected zones.
Veterinariia 32 no.8:45-47 Ag '55.   (MLRA 8:10)

1.Mirzachul'skiy plemsovkhoz imeni Bushuyeva, Tashkentskey oblasti.
(HEMOSPORIDIA)(UZBEKISTAN--TICKS AS CARRIERS OF DISEASE)(DISINFECTION
AND DISINFECTANTS)

USSR / Diseases in Animals. Diseases Caused by Protozoa   R

Abs Jour: Ref Zhur-Biologiya, No 16, 1958, 74226

Author   : Vyazkova, S. F.; Bernadskaya, Z. M.; Stepanov, A. M.

Inst   : Not given

Title   : Chlorten in Prophylaxis of Hemosporidiosis in
          Cattle

Orig Pub: Veterinariya, 1957, No 6, 58-59

Abstract: Bathing young cattle stock every seven days in a
          bath with 0.7 percent emulsion of chlorten preven-
          ted attacks of Boophilus calcaratus and assured
          prophylaxis of piroplasmosis, tularemia, and ana-
          plasmosis, and significantly decreased the number
          of attacks on the animals of Hyalomma detritum.
          No harmful effect was noted on the animals' organi-

Card 1/2

LI, P.N., kand. veter. nauk; STEPANOV, A.M., veterinarnyy vrach

Results of field testing of the method for the immunization
of cattle against piroplasmosis and southern babesielosis.
Sbor. nauch. rab. Sar. NIVS 6:155-162 '63.

(MIRA 18:11)

STEPANOV, A.M., inzhener; BUNIN, D.A., inzhener.

Electric interlocking block systems. Zhel.dor.transp. 37 no.5:
69-72 My '56.   (MLRA 9:8)
          (Railroads--Signaling--Block system)

STEPANOV, A.M.

Let's eliminate waste. Avtom., telem.i sviaz 2 no.4:42
Ap '58   (MIRA 12:12)

1. Nachal'nik tekhnicheskogo otdela sluzhby signalizatsii i
svyazi Severnoy dorogi.
            (Railroads--Equipment and supplies)
              (Electric lines--Overhead)

STEPANOV, A.M.

Attention to safety measures. Avtom. telem. i sviaz' 3 no.11:44 N '59
(MIRA 13:3)
1. Nachal'nik tekhnicheskogo otdela sluzhby signalizatsii i svyazi
Severnoy dorogi.
(Railroads--Safety measures)

STEPANOV, A.M.

      Correspondence students should participate in practical planning.
      Avtom., telem.i sviaz' 4 no.4:39 Ap '60.   (MIRA 13:6)

    1. Starshiy inzhener sluzhby signalizatsii i svyazi Severnoy dorogi.
        (Railroads--Signaling)

SHKLYAEV, L.I.

Mechanization of ... p... ... operations. Avtom. tele .
i svlazr' 5 no.:35-36 S '61.   (MIRA 14:12)

1. Starshiy inzh. sluzhby signalizatsii i svyasi Severnoy
dorogi.
                        (Electric lines)
                        (Railroad motorcars)

STEPANOV, A.M.

Inaccuracies decrease the value of books. Avtom., telem.i sviaz'
6 no.1:46 Ja '62.   (MIRA 15:3)

1. Starshiy inzh. sluzhby signalizatsii i svyazi Severnoy dorogi.
        (Bibliography--Railroads--Signaling)

DEMIDOV, P.G.; BYCHKOVA, N.M.; STEPANOV, A.M.; UKHANEV, Yu.P.

Effect of the specific area and environment of wood on the
changes in its rate of combustion. Pozh. bezop. no.4:91-100
'65.   (MIRA 19:1)

ACCESSION NR: AP4026852   S/0065/64/000/004/0049/0050

AUTHORS: Akivis, Yu. M.; Kharin, G.N.; Stepanov, A.M.

TITLE: Use of ammonia as neutralizing material in diesel ships operating on sulfurous fuel

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 4, 1964, 49-50

TOPIC TAGS: diesel fuel, sulfur containing fuel, ammonia, neutralizing agent, wear reduction, deposit formation, internal combustion engine, scale formation

ABSTRACT: Tests were run to verify a proposal by B.V. Losikov et. al (Avtorskoye svidetel'stvo No. 115811 "Author certificate No. 115811"; khim. i. tekhnol. topliv i masel, No. 2, 1961) for a method of reducing wear and deposite in engines burning sulfur-containing fuels by introducing gaseous ammonia into the intake system of the internal combustion engine. Diesel fuel "L", GOST 305-58, with 0.8-1% sulfur and oil DSp-11, GOST 8581-57, containing 3% of additive TsIATIM-339 were used on test stand engines and on a 300 hp ship engine. In the test engines the general wear of the

Card 1/2

ACCESSION NR: AP4026852

cylinders without injection of ammonia was two times greater than
of those with ammonia. The cylinders of the ship engine showed less
(by about 1.6-17 times) wear and less scale formation on the cylinder
head and at the bottom of the cylinder when ammonia was used.' With
ammonia only 1 ring was clogged with coke (compared with 6 when no
ammonia was used) and the deposite were light gray (compared to
black). Orig. art. has: 2 tables

ASSOCIATION: Giprory*bflot (State Institute for the Design and
Planning of Establishments of the Fish Fleet)

SUBMITTED: 00   DATE ACQ: 28Apr64   ENCL: 00

SUB CODE: FL   NR REF SOV: 003   OTHER: 000

Card 2/2

STEPANOV, A.M., inzh.

Plan of the Taas-Tumus-Yakutsk-Pokrovsk-Bestyakh gas pipeline.
Stroi. truboprov. 6 no.6:2-6 Je '61.   (MIRA 14:7)

1.   Institut Yuzhgiprogaz, g. Stalino.
                    (Gas, Natural—Pipelines)

1. STEPANOV, A. K.; KHILANOV, V. M.

2. USSR (600)

4. Soil Binding

7. Effectiveness of openwork sand fences. Les i step' 5, No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, _____April_____ 1953, Uncl.

STEPANOV   J-4

USSR/Forestry - Forest Culture.

Abs Jour   : Referat Zhur - Biologiya, No 16, 25 Aug 1957, 69133

Author   : Leontev, A.A., Stepanov, A.M., Neborak, A.N., Koksharova,
               N.E., Kukorekina, E.A.

Inst   :
Title   : Most Effective Methods of Bind and Afforesting Shifting
               Sands.

Orig Pub   : Byul. nauchn.-tekhn. inform. Sredneaz. n.-i. in-ta lesn.
               kh-va, 1955, No 1, 6-16

Abstract   : Based on experiments conducted on sands of Turkmen and
               Uzbek SSR, recommendations are suggested on rationaliza-
               tion of sand consolidation measures. Instead of mechani-
               cal protection with plantings of shoots and seedlings, es-
               pecially in districts with comparatively light winds, the
               use of a lightened spread of mechanical protection is re-
               commended: yantak, reed, mace and wormwood in conjunc-
               tion with combined sowings and plantings. In furrowed

                                  - 57 -
Card 1/2

USSR/Forestry - Forest Culture.   J-4

Abs Jour   : Referat Zhur - Biologiya, No 16, 25 Aug 1957, 69133

            grooves a mechanized sowing of haloxylon is suggested
            without mechanical protection. Data are given on pro-
            tective construction, agrotechnique of cultivations
            and assortment of species.

Card 2/2   - 58 -

STEPANOV, A.M.

Experience in furrowing takyrs and in growing black suksaul on them.
Izv.AN Turk.S.S.R. no.3:125-128 '57.   (MIRA 10:10)

1. Nebitdagskaya agrolesomeliorativnaya opytnaya stantsiya.
                    (Takyr)   (Saksaul)

SOROKIN, Aleksey Ivanovich; GROZOV, Nikolay Vasil'yevich; STEPANOV,
     Aleksandr Makarovich; STAROSTIN, Yevgeniy Il'ich; CHERNYAK,
     Lev Mikhaylovich; BOKSERMAN, Yu.I., red.; SVYATITSKAYA, K.P.,
     ved. red.; YAKOVLEVA, Z.I., tekhn. red.

     [Liquefied gases in England; their transportation, storage,
     uses] Szhizhennye gazy v Anglii; transport, khranenie, is-
     pol'zovanie. Moskva, Gostoptekhizdat, 1963. 140 p.
                                             (MIRA 16:10)
        (Great Britain--Liquefied petroleum gas)

STEPANOV, A.M.

Emulsification of warp in the manufacture of woolen cloth.
Tekst. prom. 23 no.6:38-40 Je '63.   (MIRA 16:7)

1. Nachal'nik tekhnicheskogo otdela fabriki "Proletarskaya
pobeda" Moskovskogo soveta narodnogo khozyaystva.
          (Woolen and worsted manufacture)

AKIVIS, Yu.M.; KHARIN, G.N.; STEPANOV, A.M.

Using ammonia as a neutralizing agent in ship diesels operating
on sulfurous fuel. Khim. i tekh. topl. i masel 9 no.4:49-51
Ap '64.   (MIRA 17:8)

1. Gosudarstvennyy proyektnyy institut ryboprcmyslovcgo flota.

STEPANOV, A.M., inzh.; RUSAN, V.I., inzh.

Temperature field of a single-phase transformer with solid
dielectric. Izv.vys.ucheb.zav.; energ. 8 no.12:64-70 D '65.
(MIRA 19:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii
i elektrifikatsii sel'skogo khozyaystva nechernozemnoy zony SSSR.
Predstavlena laboratoriyey elektrosnabzheniya. Submitted October 27,
1964.

L 22338-66   EWT(m)/EWA(d)/EWP(t)/EWP(k)   IJP(c)   JD
ACC NR: AP6013517

SOURCE CODE: UR/0120/66/000/002/0151/0153

AUTHOR: Malkin, O. A.; Reys, I. A.; Stepanov, A. M.

ORG: All-Union Electrotechnical Institute, Moscow (Vsesoyuznyy elektrotekhnicheskiy institut)

TITLE: Miniature probe for measuring variable magnetic fields

SOURCE: Pribory i tekhnika eksperimenta, no. 2, 1966, 151-153

TOPIC TAGS: plasma probe

ABSTRACT: A miniature magnetic probe consisting of copper wire wound on nichrome wire 0.15 mm in diameter is described (see Fig. 1). The leads are twisted and recessed 1 cm and covered with organic material which hardens upon drying. The probe is placed into a Kovar sleeve whose outside diameter is 5 mm and is covered with a glass case which isolates the probe coil from plasma. The thickness of glass where the probe is located is 0.2 mm. The sleeve is inserted into a rubber cork which establishes a vacuum equal to 10^{-5} torr. The leads are connected to a shielded coaxial cable reducing the portion exposed to fields to 10—12 mm. Five probes of different size were made. These include probes 1.2 and 1.6 mm in outside diameter with 70 and 160 turns, respectively. Measurements with a 1.2 mm-o.d. probe of mag-

Card   1/2

UDC: 621.317.42
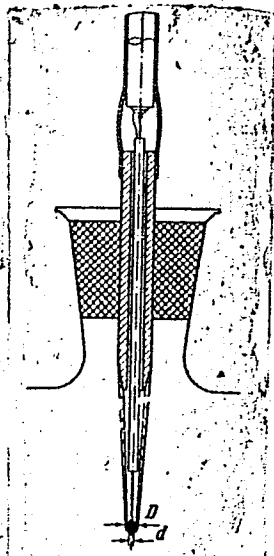
L   22338-66

ACC NR: AP6013517   O

Fig. 1.   Miniature magnetic probe

netic fields whose strength was equal to 2400 gauss were accurate to within 15—20%.
Orig. art. has: 4 figures.

[BD]

SUB CODE: 09/   SUBM DATE: 09Nov65/   ORIG REF: 004/   OTH REF: 001/   ATD PRESS:

Card   2/2 ata   4241

S/137/62/000/001/209/237
A154/A101

AUTHORS: Stepanov, A. N.; Samarin, A. A.

TITLE: Obtaining sheet steel by decarbonizing sheet cast-iron

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 96, abstract 1I687
             (V sb. "Polucheniye izdeliy iz zhidk. met. s uskoren. kristalli-
             zatsiyey". Moskva-Kiyev, Mashgiz, 1961, 262 - 276)

TEXT: Tests were made for developing a technological process for obtaining
sheet steel by decarbonizing sheet cast-iron in a solid medium. In order to
thus obtain sheet steel with good mechanical properties and corrosion-resistance,
the sheet cast-iron should be made of metal with 0.5 - 0.8% Cr and 0.2% Cu. The
decarbonizing should be carried out in a mixture of class II iron ore (hematite)
(85 - 90%), chalk (8 - 10%) and carbon (peat coke) (2 - 5%). Decarbonizing an-
nealing should be carried out at 980 - 1,020°C for 4 - 5 hrs for 1 mm sheet and
7 -9 hrs for 1.5 mm sheet. There are 5 references.

                                                    T. Fedorova

[Abstracter's note: Complete translation]

Card 1/1

BANNIKOV, N.I.; STEPANOV, A.N.

Industrial thermal electric stations should be located in a single complex with the enterprises being served. Prom stroi. 39 no.6:60-61 '61. (MIRA 14:7)
(Electric power plants)

STEPANOV, A. N., jt. au.

KNIAZEV, A. K.

Mechanization of finishing and assembling of plastic manufactured articles. Moskva, Gos. nauch.- tekhn. izd-vo khim lit-ry, 1949. 36 p. (55-16858)

TP986.5.E4K6

KLIMENKO, S.M.; STEPANOV, A.N.; GUSEV, N.V.

Cryostat for obtaining thin sections from non-fixed tissue, frozen
with freon-12. Vop. virus. 5 no. 1:106-108 Ja-F '60.
(MIRA 14:4)

1. Institut virusologii imeni D.I. Ivanovskogo AMN SSSR, Moskva.
(MICROTOME)

124-58-6-6495

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 6, p 30 (USSR)

AUTHOR: Stepanov, A. P.

TITLE: On the Effect of Water on the Vibration Frequency of Blades and
            Plates (O vliyanii vody na chastotu kolebaniy lopastey i plastin)

PERIODICAL: V sb. : Gidroturbostroyeniye.   Vol 4. Moscow-Leningrad,
            Mashgiz, 1957, pp 138-144

ABSTRACT: An experimental investigation is made of the variation in the
            vibration frequency of hydraulic-turbine blades as a function of
            the density and viscosity of the fluid medium in which the vibra-
            tions occur. Thus, a blade's vibration frequency in water is
            20-40% lower than its vibration frequency in air. The more
            rigid a blade is, the smaller will be its drop in vibration fre-
            quency. Altering the speed of the water flow from 0 to 3 meters
            per second has virtually no effect on the vibration frequency.

                                                        V. A. Kulagina

    1. Turbine blades--Vibration

Card 1/1

PODMOGAYEV, V.Ya.; BAUER, D.D.; SHER, A.Ye.; STEPANOV, A.P.

Vertical filling of bottom sections of aluminum electrolyzers.
Prom.energ. 15 no.5:21-22 My '60. (MIRA 13:7)
(Alumimum--Electrometallurgy)
(Electrolysis--Equipment and supplies)

S T E I

MEDVEDKOV, Vladimir Ivanovich; STEPANOV, Aleksey Pavlovich; SMELYANSKIY, V.A., redaktor; MAL'KOVA, N.V., tekhnicheskiy redaktor

[Adjusting the ZIL-150 and ZIL-151 automobiles] Regulirovka avtomobilei ZIL-150 i ZIL-151. Moskva, Nauchno-tekhn. izd-vo avtotransp. lit-ry, 1957. 56 p.   (MLRA 10:4)
          (Automobiles--Maintenance)

MEDVEDKOV, Vladimir Ivanovich; STEPANOV, Aleksey Pavlovich; NIKITIN,
     A.G., red.; NIKOLAYEVA, L.N., tekhn.red.

     [Maintenance of the ZIL-164 and ZIL-157 motortrucks] Regulirovka
     avtomobilei ZIL-164 i ZIL-157. Moskva, Nauchno-tekhn.izd-vo
     Min-va avtomobil'nogo transp. i shosseinykh dorog RSFSR, 1960.
     63 p.   (MIRA 13:12)
               (Motortrucks--Maintenance and repair)

85340

S/120/60/000/005/008/051
E032/E514

9.6130

AUTHORS: Ryzhkov, M.V., Bronzov, O.O. and Stepanov, A.P.

TITLE: A Nuclear Magnetometer /*9*

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.5, pp.41-45

TEXT: A description is given of a high-sensitivity magneto-
meter designed for measurements of variations in the Earth's
magnetic field. A photograph of the apparatus is shown in Fig.1.
In distinction to the forced precession which is observed when
constant and radio-frequency magnetic fields are applied to a
specimen, the "free precession" is defined as the precession of the
macroscopic nuclear magnetization vector in a constant magnetic
field, i.e. without the radio-frequency field. In the equilibrium
state, the magnetization $M = \chi_o H$ of the nuclear paramagnetic is
parallel to the applied constant field H and in order to obtain
a precession of the magnetization vector, the latter must be
artificially given a non-equilibrium orientation in the field H.
In the Packard-Varian method (Ref.1) this is achieved by preliminary
magnetization of the specimen by a large magnetic field H_p in a
direction which is roughly perpendicular to the measured field H.

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S/120/60/000/005/008/051
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A Nuclear Magnetometer

After the application of the auxiliary field the magnetization of the specimen increases in accordance with the law

$$M = M_o \left[1 - \exp(-t/T_1) \right] ,$$

where $M_o = \chi_o H_p$ is the equilibrium magnetization. The time constant T_1 is called the thermal relaxation time and depends on the temperature and composition of the substance. For water $T_1 \sim 3$ sec (Ref.2). When the auxiliary field is switched off sufficiently rapidly, the magnetization vector is incapable of changing its magnitude and orientation in space and begins to precess around the measured field H. The precession frequency ω_L is proportional to the magnitude of the measured field so that $\omega_L = \gamma H$, where γ is a constant independent of the external conditions and is practically equal to the gyromagnetic ratio of the nucleus, measured in strong fields. Only for very weak fields, of the order of the width of the nuclear resonance line, does the constant γ begin to depend on the field and temperature. The

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S/120/60/000/005/008/051
E032/E514

A Nuclear Magnetometer

variable magnetic flux associated with the precession of the magnet-
ization vector induces in the coil surrounding the specimen an
alternating e.m.f. of frequency ω_L. Thus, in order to measure the
field strength, it is sufficient to measure the frequency of this
emf. Hydrogen nuclei are convenient as the probe element since
they have the maximum gyromagnetic ratio (except for tritium) and
this gyromagnetic ratio is accurately known. The magnitude of the
precessing magnetization vector will decrease with time owing to
relaxation processes and this reduction can be described by the
formula

$$\underline{M} = \chi_o\left[\underline{H}_p\exp(-t/T_2^*) + \underline{H}\right]$$

After a few T_2^* the precession effect becomes unobservable and in
the case of repeated measurements of H the precession must be
periodically re-introduced. The block diagram of the magnetometer
based on this effect, which was developed by the present authors,
is shown in Fig.3. It consists of the probe, a commutator, a
pre-amplifier, a time relay, a frequency meter and a supply block.

Card 3/6

85340

S/120/60/000/005/008/051
E032/E514

A Nuclear Magnetometer

The probe is designed to have a sensitivity of about 2×10^{-6} Oe with a pass-band of 100 cps and has a single coil which is used both to produce the auxiliary field H_p and to pick up the precession signal. The coil has 900 turns and is wound on a thin-walled perspex cylinder 12 cm long and 9 cm in diameter. The cylinder is filled with distilled water. The relaxation time of the specimen T_1 was determined from the dependence of the initial signal amplitude on the time of magnetization. The transverse relaxation time T_2 (Ref.9) was determined from the rate of decay of the signal. Within the limits of experimental error it was found that $T_1 = T_2 = 2$ sec. The relaxation time was reduced to 0.7 sec by the addition of copper sulphate to the water. This corresponds to a time of measurement $T_m = 0.5$ sec and time of magnetization $T_p = 1$ sec. During the reception of the precession signal the coil is tuned to the expected frequency with the aid of a capactor. With a single, fixed tuning, the probe can be used to measure the Earth's magnetic field in an interval of 0.017 Oe. In addition, the tuning can be altered so that other intervals can

Card 4/6

85340

S/120/60/000/005/008/051
E032/E514

A Nuclear Magnetometer

be investigated. The commutator is set up on a separate panel and
is used in a periodic switch over of the probe coil from the
magnetizing battery to the amplifier and vice versa. The commutator
consists of a power and a signal relay controlled with the aid of a
time relay. The power relay controls the magnetizing current and
the signal relay shunts the coil with a 39 kΩ resistor and shorts
the input of the amplifier. The power relay is switched off after
a time T_p and a transient process takes place in the coil with a
time constant of 2×10^{-4}. After a delay of 5 msec when the
transient process has been damped out, the signal relay is switched
off, opens the input of the amplifier and switches the probe
coil to the amplifier input. The pre-amplifier has three stages
consisting of 6Ж1П (6Zh1P) tubes. The amplification factor is
1500 and the noise factor 1.2. The design of the frequency meter
is based on the requirement that with a sensitivity of 2×10^{-6} Oe
the magnetometer should reliably measure precession frequency
changes of 0.01 cps during the chosen time of measurement $T_m=0.5$ sec.
In order to ensure this accuracy in the measurement of frequency,
use was made of the method described by Waters and Francis (Ref.13).
Card 5/6

85340

S/120/60/000/005/008/051
E032/E514

A Nuclear Magnetometer

Typical diurnal variations in the Earth's magnetic field obtained on May 26, 1958 in the neighbourhood of the Kosulino Station, where the Earth's magnetic field is H = 0.545 Oe, are shown in Fig.5. For comparison, the dotted curve shows the diurnal variations as obtained by the local magnetic observatory. The relative error was found to be $5.5 \times 10^{-4}\%$ and the absolute error $1.3 \times 10^{-3}\%$. Acknowledgments are expressed to G. V. Skrotskiy for advice and interest and to A. I. Kolesnikov for preparing some of the parts of the magnetometer. There are 6 figures and 14 references: 4 Soviet and 10 English.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
(Ural Polytechnical Institute)

SUBMITTED: May 26, 1959

Card 6/6

S/120/62/000/003/024/048
E039/E135

AUTHOR: Stepanov, A.P.

TITLE: Apparatus for the investigation of proton relaxation for liquids in weak magnetic fields

PERIODICAL: Pribory i tekhnika eksperimenta, no.3, 1962, 102-106

TEXT: Description of a simple apparatus for measuring large ($>$ 0.1 sec) relaxation times for protons in low viscosity liquids by the spin echo method in fields of 0.5 to 5.0 oersted. In weak fields the amplitude of the echo signal is increased by the use of a polarising magnetic field H_p significantly larger than, and perpendicular to, the field H_0 in which the signal is observed. Time of relaxation T_1 determined from the dependence of the amplitude of the echo signal V on time of polarisation τ_p is obtained from

$$V = K \left[1 - \exp(-\tau_p/T_1) \right]$$

where K is a constant. Time of relaxation T_2 is determined from the dependence of the amplitude of the echo signal

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Apparatus for the investigation of... S/120/62/000/003/024/048
E039/E135

$V = K'\exp(-2\tau/T_2)$ on the delay time τ at constant time of polarisation τ_p. The latter method is free from errors due to non-uniformity in the magnetic field. The effect of self-diffusion is discussed and it is shown that additional damping due to this can be excluded by the choice of a sufficiently small time interval 2τ between pulses. Sample volume is 100-500 cc and the receiving coil has 400 to 1000 turns, the signal from which is amplified and presented on the screen of an oscilloscope. The associated circuitry is described in reasonable detail. Results are presented for a sample of distilled water in the earth's magnetic field, $H_0 = 0.54$ oersted. Time of relaxation T_1 is given as 2.3 ± 0.2 sec and for the same sample the echo signal, using a polarisation time $\tau_p = 10$ sec, gives a value of $T_2 = 2.0 \pm 0.2$ sec. When using a series of pulses the relaxation time estimated from the oscillogram is 2.5 ± 0.1 sec. The difference between these values is apparently due to self-diffusion; the estimated value of the self-diffusion coefficient being about 10^{-5} cm^2/sec. It is also possible to estimate the

Card 2/3

Apparatus for the investigation of... S/120/62/000/003/024/048
E039/E135

field gradient from these results.   Measurements have been made
of T2 values of protons in an aqueous solution of
$K_2[NO(SO_3)_2]$ at different concentrations and the dynamics of
polarised protons in the earth's magnetic field have been studied.
There are 5 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
             (Ural Polytechnical Institute)

SUBMITTED: November 9,1961

Card 3/3

STEPANOV, A.P.

Use of nuclear magnetic resonance in analytic chemistry.
Trudy Ural. politekh. inst. no.111:130-152 '61.
(MIRA 16:6)
(Nuclear magnetic resonance and relaxation)

BRYANSKIY, G.A., kand. ekon. nauk; BYALKOVSKAYA, V.S., kand. ekon. nauk; KRYLOVA, N.V., inzh; SLODKEVICH, N.I., kand. ekon. nauk; STEPANOV, A.P., kand. ekon. nauk; KHOLOMINA, O.A., kand. ekon. nauk; GORENSHTEYN, B.I., inzh., retsenzent; SOCHINSKIY, A.R., inzh., red.

[Problems on the organization and planning of machinery-industry enterprises] Sbornik zadach po organizatsii i pla-nirovaniiu mashinostroitel'nykh predpriiatii. [By] G.A. Brianskii i dr. Moskva, Mashinostroenie, 1964. 406 p.
(MIRA 17:9)

RYZHKOV, V.M.; STEPANOV, A.P.

Usabilty of the dynamic polarization of protons in nuclear-
precession magnetometers. Geofiz. prib. no. 12:35-51 '62.

(MIRA 17:5)

1. Ural'skiy politekhnicheskiy institut.

Card 1/2

L 45424-65

ACCESSION NR: AP5007051

the nuclear magnetization into the plane perpendicular to the terrestrial magnetic field H_0; (3) Nonadiabatic shutting off the turning field $h(t)$ and damping of transients in the receiving coil. The 90°-turn of the nuclear magnetization is effected by the short pulse of an auxiliary field. Field tests of a laboratory model of the magnetometer showed that its operating-cycle time may be as low as 0.5 sec. "The authors wish to thank A. I. Kolesnikov who materially helped to build the laboratory model." Orig. art. has: 4 figures and 3 formulas

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S. M. Kirov (Ural Polytechnic Institute)

SUBMITTED: 26Dec63   ENCL: 00   SUB CODE: ES, NP

NO REF SOV: 004   OTHER: 004

Card 2/2

MATEVOSYAN, R.O.; STEPANOV, A.P.; STASHKOV, L.I.; RUDAYA, M.N.

Chemistry of free radicals of the hydrazine series. Part 31:
Relative stability of some hydrazyl radicals in dioxane.
Zhur. org. khim. 1 no.11:1922-1927 N '65.   (MIRA 18:12)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova,
Sverdlovsk. Submitted November 27, 1964.

L 24259-66   EWT(1)/EWT(m)/EWP(j)/ETC(m)-6   IJP(c)   WW/RM

ACC NR: AP6007824   SOURCE CODE: UR/0120/66/000/001/0128/0132

AUTHORS: Stepanov, A. P.; Stotskiy, V. M.; Filatov, A. I.   67
                                                                     66
ORG: Ural Polytechnic Institute, Sverdlovsk (Ural'skiy
politekhnicheskiy institut)   B

                                                    2/
TITLE: Electron-nuclear double resonance spectrometer

SOURCE: Pribory i tekhnika eksperimenta, no. 1, 1966, 128-132

TOPIC TAGS: nuclear resonance, electron paramagnetic resonance,
electron paramagnetic spectrometer, paramagnetic relaxation, line
width, hyperfine structure, magnetometer

ABSTRACT: The article describes apparatus for the observation of
dynamic polarization of nuclei in solutions of paramagnetic sub-
stances. The apparatus contains a source for a constant magnetic
field, a system for detecting the nuclear magnetic resonance signal
(which is proportional to the nuclear polarization), and a system for
the saturation of the EPR lines. The apparatus can be used to measure
the coefficient of increase in the polarization of the nuclei, the

Card   1/2   UDC: 539.28.078   2

L   24259-66
ACC NR: AP6007824

nuclear and electronic relaxation times, the hyperfine structure of EPR spectra in a weak magnetic field (8 -- 50 Oe) at temperatures from 0 to +80C. Being designed for weak fields, where the conditions for strong narrowing of the resonant lines are easier to satisfy, the apparatus is simpler than that used for strong field measurements. The use of the equipment and its construction are described in detail. The accuracy is approximately 10%. As an example measurement results are presented for the hyperfine structure of the EPR spectra of solutions of DPPH in benzene, which could not be measured earlier, since the standard EPR technique is insufficiently sensitive for this purpose. The apparatus can also be used to select working media for nuclear precession magnotometers. Orig. art. has: 5 figures and 4 formulas.

SUB CODE: 20   SUBM DATE: 22Jan65/   ORIG REF: 003/   OTH REF: 007

Card   2/2

ACC NR: AT6031630 (N)   SOURCE CODE: UR/3175/66/000/029/0035/0041

AUTHOR: Rozantsev, E. G.; Stepanov, A. P.

ORG: [Stepanov] Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR); [Rozantsev] UPT im. S. M. Kirov

TITLE: New active materials for nuclear magnetometers

SOURCE: USSR. Gosudarstvennyy geologicheskiy komitet. Osoboye konstruktorskoye byuro. Geofizicheskaya apparatura, no. 29, 1966, 35-41
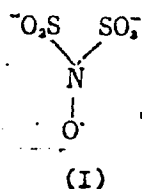
TOPIC TAGS: nuclear magnetic resonance, nuclear spin, nuclear structure, electron polarization, magnetic effect, magnetic field measurement, earth magnetism, proton polarization, paramagnetic material, EPR spectrum

ABSTRACT: New active materials for use in nuclear precession magnetometers have been developed by the Institute of Chemical Physics, AN SSSR. These nitric acid radicals have a number of advantages over the conventional aqueous solution of nitrosodiumsulfonate $K_2(NO(SO_3)_2)$. The operation of nuclear precession magnetometers is cyclic. First the active material is polarized and then the frequency of the signal, generated by the transducer (containing the active material) in the presence of a magnetic field and proportional to its strength, is measured. The combination of the two processes improves the response speed of the magnetometer, and increases the signal-to-noise ratio.

Card 1/3

ACC NR: AT6031630

These improvements became possible with the discovery of the nitrosodiumsulfonate as an active material. The dissociation of this salt in water generates paramagnetic ions which exhibit a superfine, well resolved structure of the electron paramagnetic resonance spectrum. Saturation of any line in this spectrum leads to a considerable increase of the nuclear magnetization of the solvent. This phenomenon is called "dynamic polarization". The great disadvantage of $K_2(NO(SO_3)_2)$ is its instability. In distilled water, the paramagnetic ion-radical dissociates in seconds. This is an autocatalytic process, the rate of which increases with concentration. Two new compounds were synthesized: 2,2,6,6-tetramethyl-1-oxypiperidine-1-oxyl (II) and 2,2,6,6-tetramethyl-4-oxypiperidine-1-oxyl (III) which are easily dissolvable in many polar and non-polar proton-containing solvents. Both compounds have an electron paramagnetic resonance spectrum with well resolved structure, similar to material (I). The new materials are very stable. Their solutions did not change over a six month period, even with heating up to 90°C. Since both salts can be dissolved in a variety of organic solvents, one with a high proton concentration and long period of proton relaxation can be chosen for best performance under any climatic conditions. One disadvant-
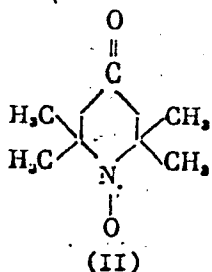
Card 2/3

ACC NR: AT6031630

$$\text{(III)}$$
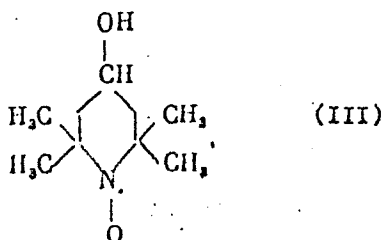
age of these materials is the large width of the electron transitions that necessitates
a high powered high frequency saturating generator. There is, however, at least in
principle, the possibility of synthesizing materials with narrower lines in the super-
fine structure of their electron paramagnetic resonance spectra. Orig. art. has: 3
figures, 2 tables.

SUB CODE: 18/   SUBM DATE: none/   ORIG REF: 005/   OTH REF: 003

Card 3/3

ZELENIN, A.N., doktor tekhn.nauk (Moskva); VESELOV, G.M., kand.tekhn.
nauk (Moskva); STEPANOV, A.P., inzh. (Moskva)

Features of the change in strength of frozen ground following
deterioration. Stroi. pred. neft. prom. 2 no.12:7-11 D '57.

(MIRA 11:3)

(Frozen ground)

STEPANOV, A.P., Cand Tech Sci-- (diss) "Study of the processes of crushing of the soils by impact loading. Frozen soils with unload impact." Los, 1958. 14 pp (Acad Sci USSR. Inst of Mining Affairs), 150 copies (KL, 13-58, 117)

AUTHOR: Stepanov, A.P. (Moscow)   SOV/24-58-4-14/39

TITLE: The Rupture of Frozen Soils by Means of Shock Loading
            (O razrushenii merzlykh gruntov pri pomoshchi
            udarnoy nagruzki)

ABSTRACT: The rupture of frozen soil by dropping a weight onto a
           wedge-shaped tool in contact with the soil was investigated
           under field and laboratory conditions. The work done in
           rupture varied from 135 to 4 400 kg.m. The specific
           energy of rupture (E, in $kg.m/m^3$) was studied as a
           function of the shape of the tool, height (H) of drop
           of the weight (Figure 2), distance (l) of the point of
           application of the tool from the open face of a cut in
           soil (Figures 1, 4 and 6), the temperature (t) of the
           soil (Figures 6 and 8), the moisture content (ω) of the
           soil (Figure 7) and the angle (β) of inclination of the
           tool to the horizontal (Figure 3). E(H) and E(l)
           exhibit minima; the latter minimum occurs when pure
           cleavage takes place during rupture. The function E(t)
           can be represented by $E = at^n$, where $n < 1$, i.e. the
Card1/2

SOV/24-58-4-14/39

The Rupture of Frozen Soils by Means of Shock Loading

specific energy of rupture increases with increase of the
negative temperature (below 0 $^\circ$C) of the soil. The least
amount of work is required to rupture a given amount of
frozen soil when the tool is sharp (10° angle at the cutting
edge) and when it is applied until the first cracks appear
and then the cleaved lump is pushed away in the direction
of the open face of a cut in the soil. There are 9 figures
and 3 tables.

SUBMITTED: January 11, 1957

Card 2/2

PROTOD'YAKONOV, M.M., prof.; STEPANOV, A.P., kand.tekhn.nauk

    Academic dissertations on rock breaking.   Izv.vys.ucheb.zav.;
    gor.zhur.   no.10:160-174   '59.   (MIRA 13:5)

   1. Moskovskiy gornyy institut.i Institut gornogo dela AN SSSR.
                   (Bibliography--Rocks)
         (Bibliography--Mining engineering)

VESELOV, G.M., kand. tekhn. nauk; STEPANOV, A.P., kand. tekhn. nauk

Experimental determination of coefficients of friction of
frozen ground. Nauch. soob. IGD 15:137-139 '62.   (MIRA 17:2)

BESSMERTNYY, Lipa Leybovich; STEPANOV,A.P., redaktor; MELENT'YEV,A.M., tekhnicheskiy redaktor

[Tables for computing vacation pay and compensation for unused vacation time.] Tablitsy dlia nachisleniia oplaty za otpusk i kompensatsii za neispol'zovannyi otpusk. Dop.izd. Moskva, Gos. statisticheskoe izd-vo, 1955. 23 p.   (MLRA 9:3)
                              (Wages)

PRUDENSKIY, G.A., glavnyy red.; STEPANOV, A.P., red.; EYDEL'MAN, B.I., red.;
    PODGORNOVA, V., red.; TROYANOVSKAYA, N., tekhn. red.

    [Labor problems in the U.S.S.R.] Voprosy truda v SSSR. Moskva,
    Gos. izd-vo polit. lit-ry, 1958. 406 p.   (MIRA 11:12)

    1. Nauchno-issledovatel'skiy institut truda.
                    (Labor and laboring classes)

STEPANOV, A. P.

Setting-up an accounting system in maintenance and service bases.
Proizv.-tekh. sbor no.1:101-103 '59.   (MIRA 13:9)

1. Leningradskaya remontno-ekspluatatsionnaya baza flota.
        (Inland water transporation--Accounting)
                (Ships--Maintenance and repair)

SILANT'YEVA, N.A.; STEPANOV, A.P.

Efficient organization of work on automatic production lines.
Mashinostroitel' no.9:43-44 S '61.   (MIRA 14:10)
        (Automation)   (Factory management)

BRYANSKIY, G.A.; STEPANOV, A.P.

       Practice in determining the economic efficiency of automation
       in machinery manufacturing. Nauch.trudy MIEI no.18:156-172 '61.
                                    (MIRA 15:2)
         (Machinery industry) (Automation)

STEPANOV, A. P.

"Organization of planning and elaboration of economic development programs"

report to be submitted for the United Nations Conference on the
Application of Science and Technology for the Benefit of the Less
Developed Areas - Geneva, Switzerland, 4-20 Feb 63

ANDREYEV, S.V.; MARTENS, B.K.; STEPANOV, A.S.; TRUSHINSKIY, A.N.

Artificial climate chamber for investigations in the field of plant protection. Zashch.rast.ot vred.i bol. 4 no.6:17-18 N-D '59.

(MIRA 15:11)

(Plants, Protection of--Research)

KRIVOROTOV, I.A., prof.; STEPANOV, A.S., podpolkovnik meditsinskoy sluzhby, kand.med.nauk; IVANOV, K.S., podpolkovnik meditsinskoy sluzhby.

Complications and changes in the internal organs in thermal burns. Voen.-med. zhur.no.8:3-8 Ag'58.   (MIRA 16:7)
(BURNS AND SCALDS)

41626

S/205/62/002/005/014/017
D243/D307

27.1220

AUTHORS: Andreyev, S.V., Martens, B.K., Molchanova, V.A., and
               Stepanov, A.S.

TITLE: Investigation of the effect of the radiation dose on
               the mortality and sexual sterilization of the barn
               weevil

PERIODICAL: Radiobiologiya, v. 2, no. 5, 1962, 758 - 762

TEXT: In view of its economic importance the author wished to dis-
cover the minimum radiation dose effectively disinfecting grain. A
γ-unit illustrated in Fig. 1, developed by the biophysics laborato-
ries of the author's Institute, was used. 50 insects, Calandra gra-
naria L, were placed in a linen container with 10 g of previously
sterilized grain and, after irradiation, was transferred to glass
jars to which a further 30 g of sterilized grain was added. The
jars were kept in a thermostat at 23 - 25°C, at suitable humidity.
The radiation doses were 0.5, 1, 8, 12 and 40 kr. Mortality estima-
tes were made after 7, 14, 27, 34 and more days. The sterilizing
effect was calculated from the number of second generation insects.
Card 1/4

Investigation of the effect of ...

S/205/62/002/005/014/017
D243/D307

The author concludes that doses of 0.5 - 1 kr increase mortality
and sterility slightly. For complete sterilization a dose of 8 kr
is required, when the lethal effect is more clearly apparent. These
figures can be used as a basis for planning an industrial γ-unit
for grain disinfestation. There are 2 figures and 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut zash-
chiti rasteniy, Leningrad (All-Union Scientific Re-
search Institute of Plant Protection, Leningrad)

SUBMITTED: May 12, 1961

Card 2/4

STEPANOV, Andrey Sergeyevich; SHUB, L.S., retsenzent; MORYGANOV,
P.V., retsenzent; VERBITSKAYA, Ye.M., red.

[Development of technology of the finishing of cotton,
linen and rayon fabrics] Razvitie tekhnologii otdelki
khlopchatobumazhnykh, l'nianykh i viskoznykh tkanei. Mo-
skva, Legkaia industriia, 1965. 267 p.   (MIRA 18:7)

AUTHOR: Stepanov, A. S.   S/050/60/000/03/013/020
                                                         B007/B002

TITLE: The Quality of Meteorological Instruments
                and Installations

PERIODICAL: Meteorologiya i gidrologiya, 1960, Nr 3, pp 45 - 46 (USSR)

ABSTRACT: Some meteorological instruments and installations show a number
                of drawbacks. Three such cases are shown here. Rizhskiy zavod
                (Riga Works) during the last years produced improved hygrographs
                M-21 and M-32. Both types show a number of advantages as compared
                to the old type of MV-11. The most important drawback of these
                instruments is the quick oxidation of some of their parts. The
                set of ground thermometers, delivered by the same Works in
                September 1958, also has drawbacks. In 1958, the Tbilisskiy zavod
                (Tbilisi Works) delivered a stand for actinometers. This has a
                number of drawbacks which were found by the Kuybyshevskaya
                observatoriya (Kuybyshev Observatory) and are discussed here.

Card 1/1

S/139/61/000
E032/E314

26024

Stepanov, A.S.

TITLE: Emission by Polarized Beams of Single-electron Atoms

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1961, No. 3, pp. 35 - 41

TEXT: The present paper is concerned with the emission of radiation by polarized beams of single-electron atoms, where the polarization is produced by a Stern-Gerlach type of apparatus (nonuniform field). The calculations refer explicitly to hydrogen although they can be easily generalised to atoms with one valence electron. The methods of quantum electrodynamics are used to derive formulae describing the electric dipole, electric quadrupole and magnetic contributions to the emission. Polarization of the electric dipole and quadrupole emission as a function of the angle of observation is also discussed. The paper is purely theoretical. There are 5 references: 4 Soviet and 1 non-Soviet.

Card 1/2

Card 2/2

AUTHORS: Ternov, I. M., Stepanov, A. S.

TITLE: Radiation from a relativistic electron which travels
                helically in a magnetic field

PERIODICAL: Moskovskiy Universitet. Vestnik. Seriya III. Fizika,
                astronomiya, no. 5, 1961, 83-89

TEXT: The radiation emitted by an electron traveling in a constant and
homogeneous magnetic field is investigated quantum-theoretically. When
the field is described by $A_x = -Hy/2$, $A_y = Hx/2$, $A_z = 0$, it is only
necessary to assume that the wave function of the electron is a solution
of Dirac's problem $i\hbar \frac{\partial \psi}{\partial t} = \left\{ c(\vec{\alpha}\vec{P}) + \rho_3 mc^2 \right\}\psi$ and also an eigenfunction of
the operator of the spin projection upon the kinetic momentum
$$(\vec{\sigma}\vec{P})\psi = \vec{\sigma}\left\{-i\hbar\vec{\nabla} + \frac{e}{c}\vec{A}\right\}\psi = \hbar k\zeta\psi; \quad \left\{\hbar k = \left\{\hbar\sqrt{K^2 - k_0^2}\right.\right.;$$
$\zeta = \pm 1$ gives the two possible orientations of the electron spin with

Card 1/5

Radiation from a relativistic...

respect to the direction of motion. These relations are sufficient to solve the problem. On the assumption that the momentum components are nonvanishing, formulas are derived for the intensities $W^{(i)}_{nn'ss'}$ of the polarized radiation emitted by the electron during its spontaneous transition from the state n, s, k_z, $\int$ into the state n', s', k'_z, $\int'$.

$W^{(i)}_{nn'ss'} = \dfrac{e^2 c}{2\pi} \oint d\Omega \varkappa^2 S_i \delta(K-K'-\varkappa)d\vec{\varkappa}$ is valid where S_i are functions of the Dirac matrix elements. As shown by A. A. Sokolov and I. M. Ternov, $S_2 = |\vec{a}_1|^2$ characterizes the emission of photons, the polarization vector of which lies in the orbital plane. $S_3 = |\bar{a}_2|^2 \cos^2\theta + |\bar{a}_3|^2 \sin^2\theta - 2\bar{a}_2^+\bar{a}_3 \sin\theta\cos\theta$ holds for the emission of photons with a polarization vector perpendicular to the orbital plane. The circularly polarized radiation is characterized by

$$S_\lambda = \frac{1}{2}\{S_2 + S_3 + i\lambda[\cos\theta(\bar{a}_1 + \bar{a}_3 - \bar{a}_3 + \bar{a}_1) - \sin\theta(\bar{a}_1 + \bar{a}_3 - \bar{a}_3^+\bar{a}_1)]\} \quad (7)$$

Card 2/5

Radiation from a relativistic...

($\lambda = 1$ corresponds to right-hand, and $\lambda = -1$ to left-hand, polarization of the phonons). The final expressions for the spectral and angular distributions of the radiation intensities are then derived, $\sin\Theta$ and $\cos\Theta$ being expressed by functions of the momentum component k_z in the field direction. The following is obtained:

$$W_2 = W^{\kappa\lambda}\left\{\frac{7}{8} - \frac{50\sqrt{3}}{16}\frac{1}{\beta'}\xi + \frac{1}{4}\zeta\frac{k_z}{K}\frac{1}{\beta'}\eta\right\},\qquad (13),$$

$$W_3 = W^{\kappa\lambda}\left\{\frac{1}{8} - \frac{5\sqrt{3}}{16}\frac{1}{\beta'}\xi + \frac{1}{4}\zeta\frac{k_z}{K}\frac{1}{\beta'}\eta\right\},\qquad (14),$$

$$W_\lambda = \frac{1}{2}W^{\kappa\lambda}\left\{1 - \frac{55\sqrt{3}}{16}\frac{1}{\beta'}\xi + \frac{1}{2}\zeta\frac{k_z}{K}\frac{1}{\beta'}\eta - \right.$$

$$\left. - \lambda\left[\frac{\sqrt{3}}{4}\frac{k_z}{K}\frac{k_0}{K} + \frac{55\sqrt{3}}{48}\frac{1}{\beta'}\zeta\xi\right]\right\},\qquad (15)$$

with

$$W^{\kappa\lambda} = \frac{2}{3}\frac{ce^2}{R^2}\left(\frac{E}{mc^2}\right)^4,\qquad \xi = \frac{\hbar}{mcR}\left(\frac{E}{mc^2}\right)^2,$$

$$\eta = \frac{\hbar}{mcR}\frac{E}{mc^2}.$$

Card 3/5

S/188/61/000/005/006/006
B102/B109

Radiation from a relativistic...

This indicates that the spin corrections in the linearly polarized intensity components are nonvanishing but by one order of E/mc^2 smaller than the main quantum correction. The relative polarization, given by

$$\delta = \frac{W_{-1} - W_{+1}}{W_{-1} + W_{+1}} = \frac{\sqrt{3}}{4} \frac{k_z}{K} \frac{mc^2}{E} + \frac{55\sqrt{3}}{48} \frac{1}{\beta'} \zeta \frac{\hbar}{mcR} \left(\frac{E}{mc^2}\right)^3,$$

does not vanish when $\hbar \to 0$ and depends on the orientation of k_z relative to H. Thus, the helical motion of an electron is accompanied by emission of circularly polarized photons. The time τ for which the polarization of the electron spin remains constant, is estimated for an orbital radius $R \sim 100$ cm and an energy of ~ 500 Mev: $\tau = 1/w \sim 10^3$ sec (w is the transition probability). Finally, the damping law is derived. With $P_z = \hbar k_z$ it reads as follows:

$$dp_z/dt = -P_z \frac{W}{E} - \frac{1}{2} \left\{ \frac{\hbar}{R} \frac{W^{\kappa\Lambda}}{E} \left(\frac{E}{mc^2}\right)^2 \right.$$

The authors express their gratitude to Professor A. A. Sokolov for discussions. There are 6 Soviet references.

Card 4/5

DOIL'NITSYN, Ye.Ya.; NOVIKOV, A.G.; STAKHANOV, I.P.; STEPANOV, A.S.

Temperature relaxation of a neutron gas. Atom. energ. 15 no.3:
255-258 S '63.   (MIRA 16:10)

(Neutrons—Spectra)

S/0057/64/034/003/0399/0409

ACCESSION NR: AP4020565

AUTHOR: Stakhanov, I.P.; Stepanov, A.S.

TITLE: Transport equations for a three-component plasma in a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.3, 1964, 399-409

TOPIC TAGS: plasma, transport equation, three-component plasma, plasma heat conductivity, plasma viscosity, plasma thermoelement

ABSTRACT: The transport equations for heat and momentum are derived for a moderately ionized plasma in a magnetic field of arbitrary magnitude. The purpose of the calculation is to obtain transport equations applicable to the theory of plasma devices for transforming heat into electrical energy. The transport equations are derived by the method of Chapman and Enskog. The ions are assumed to be singly charged and to have the same temperature as the neutral atoms. The electron temperature may differ from the ion and atom temperature. Distant (Coulomb) collisions are taken into account in the kinetic equation by employing the collision integral of L.D. Landau (ZhETF 7,203,1937), and collisions with neutral atoms are treated from the standpoint of the elastic sphere model. The deviations of the distribution func-

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ACCESSION NR: AP4020565

tions from the Maxwellian form are expanded in series of Sonine-Laguerre polynomi-
als of index 3/2, and equations are derived for the expansion coefficients. All
terms except those of the two lowest orders are neglected, the resulting equations
are solved, and the equations for heat flux and friction forces are obtained. The
viscosity tensor is calculated by the method employed by S.I.Braginskiy (ZhETF 33,
459,1957), involving an expansion in Sonine-Laguerre polynomials of index 5/2.
There is said to be an error in Braginskiy's expression for his viscosity tensor.
The entropy balance equation is derived. The rate of entropy production is suitably
factored into fluxes and forces, and the corresponding Onsager equations are writ-
ten. The transport equations are specialized to the case of steady motion in the
absence of a magnetic field, and are compared with the equations derived by B.Moy-
zhes and G.Pinus (FTT 2, No.4,1960). It is found that when Coulomb interactions are
significant, the approximations employed by these authors lead to rather large er-
rors. Orig.art.has: 45 formulas and 1 table.

ASSOCIATION: none

SUBMITTED: 16Apr63   DATE ACQ: 31Mar64   ENCL: 00

SUB CODE: PH   NR REF SOV: 007   OTHER: 002

Card 2/2

AUTHOR: Stakhanov, I. P.; Stepanov, A. S.

TITLE: On the oscillations of the current in a thermoelectronic energy converter

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 1, 1965, 132-139

TOPIC TAGS: thermionic energy converter, plasma energy converter, thermionics, oscillation, plasma, instability

ABSTRACT: A new method proposed for the investigation of oscillations in a thermoelectronic energy converter offers the advantage of explaining the formation of ion clusters and also takes into account the occurrence of collisions. Because a dispersion formula derived from the kinetic and Poisson equations becomes intractable when the distribution functions of electrons and ions in the near-cathode regions are inserted, the authors approximate f_e by two electron beams, one of them representing the electrons in a quiescent plasma and the other the perturbation caused by the passage of the current through the diode. The perturbations of the ion distribution are

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ACCESSION NR: AP5003247

concentrated in one point, and therefore f_i is represented by a single
beam. The use of the above approximation leads to a simplified dis-
persion function for beam instability which shows that, in the region
close to the cathode, the instability sets in at sufficiently strong
electron currents, or, when the electron current is small, at strong
ion current. It is in this near-cathode region that the instability
engenders quasi-neutral longitudinal oscillations of the plasma in
the interelectrode spacing, the phase velocity of which is of the
order of the thermal ionic velocity, while the damping is determined
by the collisions with neutral atoms. The frequency of these oscilla-
tions is found and is shown to be inversely proportional to the inter-
electrode distance if the pressure is low, and inversely proportional
to the square of the interelectrode distance if the pressure is high.
The results are shown to be in good agreement with experimental data.
Orig. art. has: 22 formulas, 1 figure, and 1 table.   [ZL]

ASSOCIATION: none

SUBMITTED: 29Feb64   ENCL: 00   SUB CODE: EC

NO REF SOV: 010   OTHER: 007   ATD PRESS: 3177
Card 2/2

STEPANOV, A.S.

25

The waterproofing of fabrics by saturation before printing. A. S. Stepanov. Hyall. Ivanov. Nauch.-Issledovatel Tekstil. Inst. 15, No. 1-2, 40-73(1940); Khim. Referat Zhur. 1940, No. 7, 05.—The fabric was satd. with bivinyl rubber and its combinations with paraffin, with ceresin or escol, with chloroprene latex and its combinations with paraffin emulsions, with chlororubber, chloroprene rubber + ceresin, with escol + softeners, with benzylcellulose, etc. In most expts. volatile solvents were used. Best results were obtained with bivinyl rubber + paraffin and bivinyl rubber + ceresin in amts. of approx. 60% of the wt. of the fabric. Four variations for satg. fabrics with rubber compns. are proposed and their tech. conditions are described.   W. R. Henn

STEPANOV A.S.

Sizing cotton warp. A. S. Stepanov, V. M. Rylukova, and V. V. Koroleva. ~U.S.S.R. 65,921, Feb. 28, 1946. Cotton warp is sized with an aq. soln. of Na_2SiO_3 having a modulus 1.6–2.0 and contg. a soap, paraffin, or similar emulsion. Cotton warp thus treated yields a fabric 20–30% stronger and more resistant to rubbing.   M. H.

STEPANOV, A.S.; BAT'KOV, A.I.; BOLTAREVA, Ye.Z.

Using "khelizarin"-type pigments for printing. Tekst. prom. 18
no.11: 37-39 N '58.   (MIRA 11:12)
(Textile printing)

STEPANOV, Andrey Sergeyevich

[New machinery and technology in textile finishing] Novaia tekhnika
i tekhnologiia otdelochnogo proizvodstva. Ivanovo, Ivanovskoe
knizhnoe izd-vo, 1959. 299 p.   (MIRA 14:3)
                    (Textile finishing)

STEPANOV, A.S.; BARINOVA A.G.

Using ammonium carboxymethylcellulose for pigment printing. Tekst.
prom. 20 no.9:47-49 S '60.   (MIRA 13:10)
                        (Pigments)

STEPANOV, A.S.; BORINOVA, A.G.; SIMAGINA, T.V.; PESKOV, G.D.

Use of the 43M phtalocyanine blue in printing. Tekst.prom.
22 no.11:56-58 N '62.   (MIRA 15:11)

1. Sotrudnik Ivanovskogo nauchno-issledovatel'skogo instituta
khlopchatobumazhnoy promyshlennosti (IvNITI) (for Stepanov).
2. Rabotniki Kokhomskogo khlopchatobumazhnogo kombinata (for
Barinova, Simagina, Peskov).
        (Textile printing)   (Phtalocyanine)

BYKOVA, I.V., st. nauchn. sotr.; STEPANOV, A.S., st. nauchn.
sotr.; SOLOV'YEV, A.P.; AFANAS'YEVA, A.A., st. nauchn.
sotr.; BOGATYREVA, L.M.; LIFENTSOVA, A.S.; SHUBA, L.S.,
red.; TIMOFEYEVA, Ye.A., red.

[Food product substitutes in the textile industry] Zameni-
teli pishchevykh produktov v tekstil'noi promyshlennosti.
Moskva, 1963. 67 p.   (MIRA 17:12)

1. Moscow. TSentral'nyy institut nauchno-tekhnicheskoy
informatsii legkoy promyshlennosti. 2. Rukovoditel' labo-
ratorii spetsial'noy otdelki Ivanovskogo nauchno-issledo-
vatel'skogo instituta khlopchato-bumazhnoy promyshlennosti
(for Solov'yev). 3. Ivanovskiy nauchno-issledovatel'skiy
institut khlopchato-bumazhnoy promyshlennosti (for all
except Shuba, Timofeyeva).

25(1), 25(7)

AUTHOR: Stepanov, A. S., Engineer   SOV/119-59-5-9/22

TITLE: An Automatic Line for the Mechanical Processing of Supports for
            Technical Manometers (Avtomaticheskaya liniya dlya mekhanicheskoy
            obrabotki derzhateley tekhnicheskikh manometrov)

ABSTRACT: For the mass production of technical manometers for general use
            (in cases of 60 mm diameter), a high degree of mechanization and
            automatization of toilsome technological processes, particularly
            for the production of supports was necessary. From a mechanical
            point of view, it is most difficult to produce the supports. Up to
            date, these supports have been made on universal machines. The
            VNITIPpribor developed, and is already producing, an automatic
            rotor line for the mechanical processing of a support from 4 sides
            with one adjustment. The following operations are carried out on
            this line: drilling, countersinking, cutting of internal and
            external threads, turning, milling of faces, and turning of pivot
            holes. This rotor line is installed with a round ten-position
            table pivoted on the central column. Of the 10 positions of the
            table, one is used for charging, 7 for processing, one for the
            control, and one for the removal of the workpiece. In each working

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An Automatic Line for the Mechanical Processing of Supports SOV/119-59-5-9/22
for Technical Manometers

position, 2 units are acting which can work the piece
simultaneously in the vertical and horizontal planes. The
workbench with the table and the column is the main part on which
all junctions of the line are mounted. Each working position is
equipped with a panel for the control of the units and of the
table. The periodical quick turn by 36° and the accurate location
is effected by the reversal of an electric motor. Also the
automatization of all movements of the table is effected by
switches. Then follows a short report on the centering of the
faceplate. The vertically acting units are equipped with devices of
unified construction for all kinds of processing. The horizontal
units are equipped with special devices (multiple-spindle devices)
for drilling, countersinking, thread-cutting and milling (see the
beginning of the abstract). A short report on the details of the
different units follows. Subsequently mentioned are the technical
data of the whole apparatus: total number of units: 14 (7 for
drilling, 4 for milling, 3 for thread-cutting); output of these
units: 0.27-1.0 kw, number of revolutions of the units per minute:
300-3100, total number of electric motors 19, total output of

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electric motors 19 kw, period of one cycle 12 seconds. The
production of a support on one of the lines of the rotor type as
described here is cheaper than by the production methods used
hitherto. In the new production method, the quantity of devices
falls to 1/15, the number of workers to 1/11, and the operation
area to the 4.6th part. Total annual saving is 950000 rubles.
There are 6 figures and 1 table.

Card 3/3

ZEMSKOV, I.F.,kand.tekhn.nauk; STEPANOV, A.S.,inzh.; DENISOV, V.F.,inzh.

Uniform distribution of gas flow in a multiplate apparatus with
fluidized beds of granular material. Khim.amsh. no.6:21-23 N-D '60.
(MIRA 13:11)

(Gas flow) (Plate towers)

ZEMSKOV, I.F., STEPANOV, A.S., TEPLYAKOV, N.M.

Regeneration of activated carbon in the process of removal of mercury vapor and mercury organic compounds from waste gases. Zhur.prikl.khim. 33 no.5:1222-1224 My '60.   (MIRA 13:7)

1. Dzerzhinskiy filial Gosudarstvennogo nauchno-issledovatel'-skogo instituta promyshlennoy i sanitarnoy ochistki gazov.
        (Carbon, Activated)   (Gas purification)

YEVDOKIMENKO, A.I.; ZABEREZHNYY, I.I.; RAFALOVICH, I.M.; REZNIK, I.D.;
Prinimali uchastiye: SHERMAN, B.P.; KUDRIN, A.N.; GALITSKIY, L.M.;
SERPOV, V.I.; VOROB'YEV, V.A.; STEPANOV, A.S.; RODIONOVA, N.M.;
BUNTOVNIKOV, A.S.; YEVDOKIMOVA, L.Ye.

Air blast preheating for shaft furnaces. Tsvet. met. 33 no.10:12-
20 0 '60.   (MIRA 13:10)

1. Gosudarstvennyy institut po tsvetnym metallam (for Yevdokimenko,
Zaberezhnyy, Rafalovich, Reznik, Rodionova, Buntovnikov, Yevdokimova).
2. Yuzhno-Ural'skiy nikelevyy zavod (for Sherman, Kudrin, Galitskiy,
Serpov, Vorob'yev, Stepanov).
                    (Air preheaters)
        (Metallurgical furnaces--Equipment and supplies)

ZEMSKOV, I.F.; STEPANOV, A.S.; GNEZDOV, V.I.

Purification of lead chloride-containing water with ion exchange
resins. Zhur.prikl.khim. 35 no.3:674-676 Mr '62. (MIRA 15:4)
(Water—Purification) (Ion exchange resins) (Lead chloride)

STEPANOV, A. S., Candidate Biol Sci (diss) -- "The electromyographic character-
istics of the motor activity of a pole-vaulter". Leningrad, 1959. 13 pp

(State Order of Lenin and Order of Labor Red Banner Inst of Phys Culture im P.F.

Lesgaft), 150 copies (KL, No 24, 1959, 133)

STEPANOV, A.S.

Effect of weight-lifting exercises on electromyographic variations
[with summary in English]. Fiziol.zhur. 45 no.2:129-136 F '59.
(MIRA 12:3)

1. From the department of physiology, P.F. Lesshaft [Lesgaft] Insti-
tute of Physical Culture; Leningrad.
   (PHYSICAL EDUCATION AND TRAINING,
       eff. of weight-lifting train. on electromyography
       (Rus))
   (ELECTROMYOGRAPHY,
       eff. of weight-lifting exercise (Rus))